Taylor Carrechea P: 20,24,26

Dr. Middleton PHYS 132 HW CQ: 3,7

Ch. 20 4-17-17

## Problems

**20.P.20**

$f = 2.0 \times 10^6$ Hz $\quad v = \lambda f$

$V = 6{,}420$ m/s $\quad n = c/v$

a.) $\lambda = \frac{V}{f} = 3.21$ mm

b.) $v = \lambda f$

$f = V/\lambda \quad f = 9.35 \times 10^{10}$ Hz

$V = 3.0 \times 10^8$ m/s

$\lambda = 3.21 \times 10^{-3}$ m

$\lambda = 3.21$ mm

$f = 9.35 \times 10^{10}$ Hz

20.P.24

$\lambda = 3.0 \times 10^{-2}\ m$

$v = 3.0 \times 10^{8}\ m/s$

$v = \lambda f$

a.) $f = v/\lambda$ $\quad f = 1.0 \times 10^{10}\ Hz$

$f = 10\ GHz$

$P = 167\ ms$

$V = 3E8\ m/s$

$\lambda = 3E(-2)\ m$

b.) $P = 1/f$ $\quad \frac{1}{f} = \frac{\lambda}{v}$

$\lambda = 50E3\ m$ $\quad P = 1.67 \times 10^{-4}\ s$

$V = 3E8\ m/s$

20.P.26 $\lambda = 35 \times 10^{-2}\ m$

a.) $v = \lambda f$

$f = v/\lambda$ $f = 8.57 \times 10^{8}\ Hz$

$v = 3E8\ m/s$

$\lambda = 35E(-2)\ m$

$f = 8.57\ Hz$
$\lambda = 0.23\ m$

b.) $n = \frac{c}{v}$

$v = \frac{c}{n}$ $v = 2.0 \times 10^{8}\ m/s$ $\lambda = v/f$ $\lambda = 23\ cm$

$c = 3E8\ m/s$
$n = 1.50$

$V = 2E8\ m/s$
$f = 8.57 \times 10^{8}\ Hz$

Conceptual

20.CQ.3 It reaches its maximum before the constant value of 1mm

20.CQ.7 $V = \lambda f$

$V = 24\ m/s$
$A = 0.04m$
$\lambda = 12m$
$f = 2Hz$

$A = 0.04m$
$\lambda = 12m$
$f = 2Hz$